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Progress in the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States

Report of the Secretary-General

Addendum

Science and technology for small island developing States**

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I. Current situation

1. Small island developing States are characterized by rich and diverse cultures of indigenous and traditional knowledge and technology. Many small island developing States lack a critical mass of qualified scientists and associated institutions. Current reward systems in island countries do not encourage long-term careers in science, and there is limited availability of funds for training and research in specialized fields of science. Brain drain adds to the scarcity of skills and expertise in relation to the advance of science in small island developing States. This is evident in the high proportion of expatriate personnel in island institutions and in aid programmes heavily weighted towards technical assistance.

2. At primary and secondary levels, the educational performance of small island developing States, except for those that are in the least developed category, has been better compared with that of many other developing countries. A number of small island developing States have made efforts to introduce basic science in school curricula, but progress in science education has been slower than desired. In the area of higher education, small island developing States could benefit tremendously from pooling their resources at the regional level.

3. Any strategy for endogenous scientific and technological capacity-building in small island developing States must take into account the fact that these countries are constrained by small manpower and inadequate infrastructure that is dependent on very few industries.

4. Most small island developing States would derive tremendous benefits from the introduction of environmentally sustainable technological innovations in the areas of the development of renewable energy, freshwater and marine resources; telecommunications and information technology; waste management and natural disaster mitigation; and sustainable land resources management. Effective utilization of technological innovations is predicated on the building of technical skills commensurate with needs, which in turn depends on the level of scientific education.

5. Most small island developing States do not possess economies of sufficient scale to allow for a national scientific infrastructure of the scope required to address many national needs. One solution to this problem is for countries to cooperate at subregional or regional levels to share institutions of higher learning and advanced research and development facilities. Pooling the resources of countries with similar problems, agreeing on common programmes and building synergies are evidently more cost-effective than developing national institutions. Given the serious lack of resources and qualified personnel in small island developing States, a realistic short-to-medium term strategy for building scientific and technological capacity to manage the effective transition to sustainable development would be to concentrate on subregional measures, wherever feasible. Subregions usually tend to share several common characteristics which facilitate a more rational and efficient use of resources, including qualified staff. Subregional efforts also have greater potential for creating local capacity in the short to medium term than regional (continental) and international programmes. Frequent contacts between scientists from small island developing States and industrialized and relatively advanced developing countries would serve as an efficient modality for rapidly disseminating and applying new scientific and technological methods. At relatively low cost, much could be achieved in practical terms by establishing funds for scientific visits and meetings, electronic communication, access to data banks and so on.

II. International efforts to assist small island developing States in the field of science and technology

6. A number of United Nations organizations and agencies support programmes and activities in small island developing States which focus on strengthening science and technology in particular sectors. Some highlights of their activities are provided below.

7. The regional Science Education in Pacific Schools programme of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) has set basic scientific literacy as its major goals. The Australian National Commission for UNESCO is currently planning a Pacific consultation meeting on science and technology in 1998-1999. Possible objectives of the meeting include sharing of experience among countries that have well-defined science policy mechanisms; education in countries that lack science policy mechanisms; education on technology choice; and the formulation of required actions to enhance science and technology in island countries. During 1998-1999, UNESCO plans to implement, through its Apia Office in Samoa, a special project entitled "Youth leadership for a culture of peace in the Pacific". This high-profile activity will bring together young people regionally and nationally to express their concerns on the major issues affecting their future peace and well-being, including science, technology and

environmental issues. The scientific environmental programmes of UNESCO and its Intergovernmental Oceanographic Commission (IOC) contribute to the advancement of knowledge, capacity-building and the promotion of the application of best practices in relation to marine and terrestrial resources in small island developing States. The International Hydrological Programme, the International Geological Correlation Programme, the Man and Biosphere Programme and the programmes of IOC cooperate in the interdisciplinary Project "Environment and development in coastal regions and small islands". They have jointly initiated several pilot projects in the Pacific and the Caribbean. Under UNESCO's Pacific World Network of Microbiological Resources Centre, activities help to raise knowledge and awareness of how to apply microbial biotechnology, and provide support to the application of tissue culture. The World Solar Programme 1996-2005, which is promoted by UNESCO, aims at improving renewable energy activities in some small island developing States.

8. The United Nations Industrial Development Organization (UNIDO) provides assistance in the development of local capabilities to identify, assess technologies and to effectively negotiate technology transfer operations. UNIDO assistance aims to promote the generation, diffusion and management of industrial technology. It also undertakes training activities to strengthen national capabilities for feasibility studies of industrial projects. UNIDO is currently developing software packages based on expert system technology to serve that purpose. The objective of a special programme of the International Centre for High Technology and Science established under UNIDO is to strengthen national training capabilities and expertise in small island developing States in the acquisition and utilization of advanced methodologies and techniques in the area of integrated coastal zone management. UNIDO is in the process of developing guidelines for the development, negotiation and contracting of build-operate-transfer projects which aim to facilitate the financing of public infrastructure projects involving technology transfer operations, and the development of the energy sector in small island developing States is expected to benefit from that scheme. To increase awareness of the opportunities for industrial development, UNIDO publishes the *Emerging Technology Series*, which provides information on technological changes, including in marine-based industry, for the benefit of developing countries in particular. To promote regional and interregional cooperation for the development of technological capacity, it is currently undertaking consultations on the economic, technical and financial feasibility of establishing regional technology centres and their networks in the Caribbean and the Mediterranean.

9. UNDP has taken a number of initiatives in support of science and technology for small island developing States. Examples include: (a) a regional programme to support the Pacific islands power sector in developing the capacities of power utilities by promoting their management and technical skills; (b) workshops in rural areas on the operation and maintenance of small electricity generating systems within the framework of the UNDP programme on diesel operators/mechanics training for Pacific island countries; (c) technical assistance in the form of expert consultancies and training courses in connection with the UNDP training development programme in the Pacific; (d) a programme for small island developing States in the Pacific region on island countries development and training, which has assisted entrepreneurs in Pacific small island developing States to establish linkages for the acquisition of technical guidance and assistance in managing new manufacturing and processing enterprises; (e) assistance to several small island developing States in the Pacific region in establishing boatyard and mechanical workshop facilities for improving national capacities in industrial fisheries. As regards traditional knowledge, a number of projects within the World Decade of Cultural Development focus on the link between culture and resource use. Several Food and Agriculture Organization of the United Nations activities focus on local knowledge and natural resources, including programmes on community forestry and non-wood timber products. Traditional medicine is promoted through the programmes of the World Health Organization.

10. Through its marine environment laboratory in Monaco, the International Atomic Energy Agency (IAEA) is involved in pilot monitoring programmes on micropollutants, as well as in capacity-building and quality assurance activities in island States of the Caribbean and East African region. IAEA supports projects involving isotope and nuclear techniques for studying retrospective conditions (climate, sea level, pollution) and to provide time-scales for small island evolution. In the framework of its five-year research project on worldwide marine radioactivity, IAEA has conducted the Pacific Ocean Expedition, which provides inputs for oceanographic, marine resources and natural disasters. In collaboration with IOC, IAEA has been active in the International Mussel Watch project. The International Council of Scientific Unions Committee on Science and Technology in Developing Countries proposes to identify ways in which science and science communication can be

strengthened in small States on the basis of their own knowledge, natural resources and needs.

11. In the past few years, the World Meterological Organization (WMO) has organized eight workshops in the small island developing States regions on training participants from the national meteorological facilities of small island developing States to upgrade their national technical capabilities. In the period under review, WMO has awarded fellowships for studies and/or training in meteorology and operational hydrology to more than 20 small island developing States. The Nedi Tropical Cyclone Warning Centre in Fiji has been designated as a WMO regional specialized meteorological centre since June 1995 in order to provide advisory services on tropical cyclone detection, monitoring and forecasting to the national meteorological services of the South Pacific.

12. A satellite-based system in the Caribbean and Central America, in operation since April 1996, has replaced existing terrestrial communication links with a view to providing rapid exchange of meteorological information, including data for improvements in natural disaster warnings. Obsolete weather radars in the English-speaking Caribbean have been replaced by modern radars in order to improve early warning services for hurricanes. Through its public weather services programme, WMO provides assistance to its members, especially those vulnerable to natural disasters, such as the small island developing States, to fulfil its primary role of providing forecasts and warnings in support of safety of life and property. A recent project under this programme was to prepare a guide to public weather services and practices to assist members in the implementation of their national programmes.

III. Recommendations for future action in the field of science and technology

A. Science

1. National level

13. Intensive and appropriate use of science and technology in small island developing States is essential for attaining sustainable development goals. Governments of small island developing States are encouraged to:

(a) Make greater efforts to improve science education in all phases of formal and informal education;

(b) Establish a network of scientists to work in schools and in the public and private sectors;

(c) Undertake national or regional assessments of needs for capacity-building in science;

(d) Promote strong linkages between universities and research institutions on the one hand, and national industries, agriculture and other economic sectors on the other hand, so that scientific knowledge and information finds its way into the productive sectors, and make every effort to induce the private sector of national economies to invest more in the development of science;

(e) Take steps to record and apply indigenous knowledge in promoting participatory approaches to natural resources management and to the equitable and sustainable use of resources.

2. Regional and international levels

14. Relevant regional organizations and international organizations, with donor assistance, could collaborate in assisting small island developing States to:

(a) Implement programmes to improve the teaching of basic science within the context of the local environment and culture. In Pacific small island developing States, use could be made of the regional Science Education for Pacific Schools programme;

(b) Better educate present and future leaders of civil society on key scientific issues affecting a sustainable future, through schools, youth work and community awareness activities.

B. Technology

1. National level

15. The Governments of small island developing countries are encouraged to:

(a) Provide incentives to venture capital and explore other modalities for meeting the required financing needs of environmentally sound technology firms;

(b) Provide fiscal and other policy incentives to encourage domestic and foreign investment in the industrial sector, and consider special incentives for environmentally sound technology-related investments.

2. Regional level

16. At the regional level it is necessary to:

(a) Promote the establishment of appropriate regional institutions for the collection and synthesis of data and information on innovative industrial technologies for the

sustainable development of small island developing States, and on the impacts of industrial innovation on their economies, including their marine and coastal systems;

(b) Develop regional mechanisms to further promote ventures for financing new technology-based firms;

(c) Assist small island developing States with very small populations in:

(i) Better applying science and technology to sustainable development at the community level through participatory projects;

(ii) Sharing information on best practices and successful methods.

3. International level

17. The international community is urged to:

(a) Enhance international cooperation in the development and promotion of technological innovations relevant for small island developing States as components of international or regional investment projects;

(b) Provide improved access to financial and technical resources to assist small island developing States in establishing regional centres for capacity-building, including training in the management of innovative technologies, technology negotiations and technology transfer.

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Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States

Report of the Secretary-General

Addendum

Human resource development in small island developing States*

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I. Introduction

1. Agenda 21 recognized that the ability of a country to pursue sustainable development is determined, *inter alia*, by the capacity of its people.[1] In the Programme of Action for the Sustainable Development of Small Island Developing States adopted at the Global Conference on the Sustainable Development of Small Island Developing States (Barbados, 26 April-6 May 1994), human beings were recognized as being at the centre of concerns for sustainable development.[2] Recent development experience in small island developing States confirms the primary role of human resources in sustainable development.

2. The present report reviews progress in this field in small island developing States since the Global Conference, it focuses on action taken by Governments, regional organizations and the international community to address the human resource challenges facing small island developing States, and analyses relevant policy issues.

II. Human resources profile

3. Small island developing States are at different stages of development, with per capita income, health and education indicators varying considerably from country to country. Such differences notwithstanding, small island developing States share economic and geographic features that constitute serious constraints on their efforts to develop human resources.

A. Population and human health

4. Recent studies on the vulnerability of small island developing States agree that they suffer from the limitations of a small population. The majority of small island developing States have populations of less than one million people, in most cases less than half a million people. Factoring in the dependency ratios, their economically active labour force is extremely small. Except for a few small island developing States, their local technical capacity is insignificant. For instance, in Kiribati, total personnel engaged in research and experimental development in all sectors numbers 3, in Tonga 15, in Seychelles 33 and in Cyprus 366.[3] With a small population and labour force on which to build endogenous capacity, small island developing States experience great difficulties in developing local expertise to meet the wide-ranging and growing demands of sustainable development.

5. The problem of a small population is aggravated in several small island developing States by poor health status. Although social indicators in most small island developing States have improved considerably, infant mortality rates in several of them that are classified as least developed remain high. Life expectancy in those countries are correspondingly low. Other health indicators, such as maternal mortality rates, are also a cause of concern, and public expenditures on health are generally low. In Haiti, for instance, annual public health expenditure amounted to 1.3 per cent of gross domestic product during the period of 1990-1995.

B. Education

6. Most small island developing States have achieved high net enrolment ratios at the first level of education. Their enrolment ratios at the secondary level are lower but relatively high among developing countries. Illiteracy rates are generally low, except in some least developed countries. But the ratios of third-level enrolment are very low in most small island developing States, which serves as a constraint to the development of domestic technical capacity. Although many small island developing States allocate considerable resources to education, public expenditures on education are low in some of them. For example, in the Dominican Republic, total public expenditure on education in the latest year for which data are available accounted for 1.9 per cent of its gross national product (1994), and in Haiti 1.4 per cent (1990).

C. Economic factors

7. A number of economic factors in small island developing States also hinder their human resource development. With the exception of a few larger States, most have highly specialized and concentrated output structure as a result of their indigenous resource endowments and small populations. The heavy dependence on tourism in a large number of small island developing States, particularly in the Caribbean, is a case in point. In some others, there is a strong dependence on a few selected commodities as the principal source of export earnings. That highly concentrated pattern of the economy leads to a narrow range of locally available expertise since a small population does not allow the building of a critical mass except in a few selected sectors. Lack of expertise in other sectors inevitably hampers small island developing States' efforts at diversification when such needs arise as a result of market forces or changes in trade regimes. Moreover, concerns over sustainability of

economic activities add a new dimension to the development endeavour requiring additional new technical skills. Since their total indigenous capacity is already limited, that new need amounts to an additional constraint to growth and calls for special efforts to augment their capacity.

D. Geographical characteristics

8. The geographical characteristics of small island developing States tend to aggravate the above-mentioned difficulties. They have small land areas, and some comprise scattered archipelagos. Their geographic layout, particularly in the archipelagic small island developing States, combined with small populations, is not conducive to achieving economies of scale in economic and social infrastructure, and increases the unit cost of public services, and insofar as human resources are concerned, it also generates additional demands, both administrative and technical, and adds to the operational difficulties of providing health care, education and training.

III. National action to develop human resources

9. Small island developing States Governments are keenly aware of the consequences of lack of human resources development. For instance, in its country report to the Commission on Sustainable Development at its fifth session, the Government of Barbados emphasized that strains on national human and institutional resources have hampered Barbados' efforts at implementing policies and programmes to address the issues of trade and environment (see E/CN.17/1997/Misc.57). The Government of Bahamas indicated that the country does not possess the human and financial resources to expand and further develop the sustainable use of its natural resources (see E/CN.17/1997/Misc 66). In Seychelles, lack of well-trained personnel was identified as a key factor constraining the effective management of national parks.[4] In Haiti, according to the country report, no research scientists or engineers work full time in the field of environment and development (see E/CN.17/1997/Misc. 25).

10. In a Caribbean meeting of experts held in May 1995 on the implementation of the Programme of Action, it was noted that not much progress had been made in its implementation at the national level. Among the major reasons identified was the insufficiency of human resource capacity in the region. The meeting underscored the critical need for capacity-building, including training and information management.

11. In the face of such difficulties, small island developing States Governments are taking initiatives to address the various aspects of the human resource problem. The available information indicates that the policy measures adopted by a number of them cut across a broad range of issues, covering institutions, environmental education, training, upgrading of local expertise in specific environmental areas, and science and technology.

12. A key component of the strategic initiatives by small island developing States is strengthening institutions responsible for the various aspects of human resource development. A number of small island developing States have created high-level bodies to monitor and coordinate the design and implementation of sustainable development strategies, including human resource development. In Cuba, as part of the Government's reorganization efforts, the Ministry of Science, Technology and Environment was created in 1995, within which the Environmental Agency and its Centre for Information, Education and Public Environmental Awareness were set up to strengthen environmental education and awareness in all sectors of the economy and among all groups of society (see E/CN.17/1997/Misc.67). In Barbados, the Ministry of Education and Youth Affairs, and the National Council for Science and Technology participate in the work of the National Commission on Sustainable Development. The Ministry of Education and Youth Affairs also engages in the activities of the Environmental Education Committee of the Ministry of Health and Environment (see E/CN.17/1997/Misc.57).

13. Some of these actions have received regional and international support. For instance, with help from the Caribbean Centre for Development Administration (CARICAD), six Caribbean countries have established broad-based and participatory national sustainable development councils, with a bottom-up approach to sustainable development issues. The operational process of those bodies has allowed broad civic participation, which has broadened debate and dialogue on sectoral issues. The public education and awareness effects of such a consultative process help to increase the level of environmental knowledge of the general public.

14. In view of their population constraints, most small island developing States Governments have accorded priority attention to universal education and training. In Barbados, the school curricula have been revised to adequately address environment health as a cross-cutting

issue at all school levels. Environment and development concerns have been introduced in teacher-training programmes. Teachers are now trained through various in-service programmes and workshops (see E/CN.17/1997/Misc.57). In Mauritius, the Government provides an environmental education programme aimed at raising awareness of the nature of pollution problems, and increasing commitment and motivation to finding solutions (see E/CN.17/1997/Misc.41). In the Bahamas, school curricula at the primary and secondary levels have been revised to address environmental and development concerns; environmental health, sanitation, ecosystems, recycling, energy saving, safe drinking water and food are now fully covered in the curricula. Schools and universities are now part of a national network addressing sustainable development issues (see E/CN.17/1997/Misc.66). In the Pacific region, the University of the South Pacific now offers an undergraduate Bachelor of Science degree in environmental studies, an interdisciplinary programme. Student enrolment has increased substantially in the last few years. The demand has spawned other environmental study programmes, both degree and non-degree, as well as post-graduate.[5]

15. Another initiative adopted by a number of small island developing States Governments is to further strengthen the role of major groups at the national and local levels so as to fully tap national potentials. In such countries as Barbados, the Bahamas, Mauritius, Sao Tome and Principe, Seychelles and several others, women are encouraged to take non-traditional jobs. Education and training facilities have been established to facilitate this process. Increasingly, women are being brought into the decision-making process and appointed to key decision-making positions in ministries concerned with sustainable development.

IV. Regional cooperation for human resources development

16. Small island developing States Governments are increasingly realizing that by pooling resources – both material, financial and human – through regional cooperative arrangements, they could do much to alleviate the constraints on sustainable development arising from inadequate resources, including human resources. The following are a few major examples of efforts at regional cooperation for human resources development:

(a) In the Caribbean region, where 16 small island developing States are situated, regional cooperation has been initiated in a broad range of areas. On the issue of climate change – an issue of vital interest to small island developing States and where local expertise is limited, a Caribbean project for adaptation to global climate change is under way, assisting 11 countries in strengthening regional capacity to monitor and analyse sea level dynamics and trends. The project focuses on capacity-building of national and regional institutions to implement specific measures, administer the information systems, research and monitor selected parameters, analyse data and manage the process of preparation for adaptation;[6]

(b) In the South Pacific, the Pacific Island Climate Change Assistance Project is being implemented through South Pacific Regional Environmental Programme (SPREP), the South Pacific Applied Geoscience Commission (SOPAC), the University of the South Pacific and other institutions. SPREP has carried out studies in 12 Pacific island countries to assess climate change impacts; SOPAC has assisted Fiji and Kiribati in carrying out studies of vulnerability to erosion, and has run seminars on coastal monitoring in Tuvalu, Kiribati and Samoa. The projects focus on "enabling activities", and aim to facilitate the implementation of effective response measures by the Pacific island countries;[6]

(c) Dealing with natural and environmental disasters is another area in which regional cooperation can help to alleviate the constraints of inadequate human resource. In the Caribbean, where most small island developing States lie within the hurricane belt, limited use or knowledge of appropriate building codes and guidelines as well as inadequate administrative and human resources for the execution of those codes have been identified as key concerns in disaster relief. In order to overcome such constraints, several regional and subregional cooperation and coordination mechanisms have been working together, among them the Eastern Caribbean Donor Disaster Coordination Group and the Caribbean Disaster Emergency Response Agency;[7]

(d) Regional cooperation in the areas of waste management, coastal and marine resources, as well as tourism, has also been initiated. In hazardous and ship-generated wastes – an area where small island developing States are lacking in expertise, training workshops have been organized in the South Pacific and Caribbean regions to enhance awareness and strengthen national capacities.

V. Action taken by the United Nations system

17. The United Nations system has participated in the implementation of the Programme of Action through the provision of either programme or project funding or technical assistance. In point of fact, human resource development has been one of the priority areas in the programme activities of United Nations organizations and agencies. The projects implemented cover a broad range of substantive areas, including health care, teacher training and training in expertise in specific fields, such as waste management, disaster relief, communications and trade. A brief account of some of those activities is provided below.

A. United Nations

18. In the framework of the "Train for trade" programme of training in the field of international trade, the United Nations Conference on Trade and Development (UNCTAD) contributes to developing the capacity of trade policy advisers and trade practitioners in small island developing States to enhance the external trade of those countries in a manner conducive to sustainable development. Ongoing projects involve Caribbean, Indian Ocean, Atlantic and the Pacific small island developing States. One of the themes of the programme is "Trade and the environment in small island developing States".

19. The Economic and Social Commission for Asia and the Pacific (ESCAP) has implemented several projects on human resource development in Pacific small island developing States, including a project focusing on reaching the poor through government/non-governmental organizations cooperation in the planning and delivery of human resource development services; ESCAP has also carried out a study on maritime manpower resources in the ESCAP region to identify the requirements for and availability of trained and qualified seafarers, including the employment potential for seafarers from small island developing States, to meet the growing world shortage. In addition, ESCAP has organized workshops, training courses and seminars on trade and investment, assessing the state of environment, statistics, population census and survey data analysis, remote sensing and other aspects of sustainable development, with participants from small island developing States in the ESCAP region.

20. The Economic Commission for Latin America and the Caribbean (ECLAC) has developed a significant programme component focusing on Caribbean small island developing States. It covers important areas identified in the Programme of Action, including "Coastal and marine resources", "Tourism resources" and "Biodiversity resources". In the area of human resource development, ECLAC has implemented a project on the integration of population policies into development planning, including women in development, in the Caribbean subregion. ECLAC is also implementing plans to strengthen environmental and sustainable development training at several universities in the subregion.

B. Funds and programmes

21. As a follow-up to the Global Conference, the United Nations Development Programme (UNDP) has initiated the Small Island Developing States Technical Assistance programme (SIDSTAP), which is designed to facilitate the exchange and transfer of knowledge, experiences, policies and practices among small island developing States. In that context, it has undertaken an assessment of the needs and gaps in technical cooperation and capacity building in priority areas, and has funded the preparation of a four-volume directory of small island developing States experts and institutions to facilitate the use of small island developing States expertise. In addition, it has been working on the implementation of the Small Island Developing States Information Network (SIDSNET), which will enable small island developing States to access and make available information on the Internet. A total of 30 workshops are envisaged to enhance the awareness of stakeholders of the Internet, teach them basic World Wide Web publishing skills and prepare them for participation in SIDSNET. At the request of UNDP, the International Training Centre of the International Labour Organization conducted initial training sessions in Internet skills for selected small island developing States regional institutions. Lead training institutions have been identified, and further training sessions were held in Barbados, Fiji and Mauritius.

22. In addition, UNDP has focused its support in small island developing States on the skills and competencies needed for achieving sustainable development. In the Pacific island countries, it has adopted an integrated approach, involving not only education and training but also poverty alleviation, increased opportunities for women, and the creation of jobs and sustainable livelihoods.

23. In the Caribbean small island developing States, UNDP has undertaken an assessment of the human resource needs in such areas as productivity enhancement, industrial

standardization, telecommunications, port management, civil aviation and computer technology. In addition, it has provided assistance in implementing a training programme in health, including environmental health in the member States of the Caribbean Common Market.

24. UNDP also has tailored its support to country-specific conditions. In Mauritius, it has focused on the provision of highly specialized training to decision makers, including government officials, the private sector, non-governmental organizations and other civil society organizations in the formulation of sectoral and intersectoral strategies and policies for economic and social development. In Cape Verde, it provides assistance to develop local capability to formulate, implement and evaluate policies supporting small and medium-sized enterprises. A lesson that has emerged from UNDP experiences is that in some small island developing States, the retention of trained manpower is comparatively low, leading to persistent demand for further training.

25. To enhance the capacity of small island developing States for dealing with environment and development issues, the United Nations Environment Programme (UNEP) provides integrated environmental management courses for key personnel from Governments, industry and business, as well as trainers from tertiary institutions. In a partnership with the United Nations Educational, Scientific and Cultural Organization (UNESCO), UNEP is carrying out activities aimed at infusing sustainable development ideas into education curricula of small island developing States.

26. The organization also has provided assistance to small island developing States in specific programme areas. In assessment of land-based activities that threaten freshwater, coastal and marine resources of islands, it has organized four regional workshops and plans to hold eight more in 1998, and plans to provide assistance to small island developing States in developing strategic action programmes on sustainable tourism, including waste minimization and pollution prevention. In freshwater management, UNEP and small island developing States cooperated closely in the preparation of regional source books on water augmentation technologies. A source book on alternative technologies for augmenting freshwater resources in small island States was compiled specifically to address the needs of small island developing States.

27. The United Nations Children's Fund (UNICEF) has channelled its assistance to the least developed small island States in a number of programme areas. In Maldives, it has provided support for on-site teacher training and for developing an accreditation system for in-service training. In Cape Verde, it has assisted in improving educational quality and improving school meals and supplies. In the Caribbean region, UNICEF and UNESCO have collaborated in providing support to the Organization of Eastern Caribbean States in the implementation of the Education Reform Strategy. UNICEF has also presented to the Government of Barbados recommendations on education reform, and supported the development and validation of didactic guides for elementary schools in Dominica.

C. Specialized agencies and other institutions

28. UNESCO has demonstrated its commitment to the special needs of small island developing States by establishing in the early 1990s its Unit for Relations with Small Member States. Operation activities under several major programmes have been designed and implemented for small island developing States, including those for basic education, environment and development in coastal regions and small States, and information flow.

29. UNESCO's Intergovernmental Oceanographic Commission (IOC) has also developed operational activities aimed at assisting small island developing States in integrated coastal area management, particularly through a regional approach. Several workshops have been organized, focusing on the specific human resource needs of small island developing States. In some instances, technical assistance has been provided to individual small island developing States based on country-specific needs, especially over the last two years, when a gradual shift from human capacity-building to operational activities has taken place, indicating the maturity of scientists in some small island developing States. The shift from education towards operational activities is also gradually taking place in the fields of marine pollution, coastal processes and critical habitats.

30. World Health Organization (WHO) activities in support of human resource development in small island developing States focus on health and the environment. In the Caribbean and Pacific, WHO, in collaboration with other organizations, has organized meetings and workshops addressing issues related to water and sanitation, health inspection, and disease prevention and care of environment. Assessments of human resource needs have been carried out in Pacific small island developing States and efforts have been made to develop a school of medicine as a potential regional human resource centre to assist in meeting health and environmental challenges.

31. The World Bank provides funding for sustainable development in small island developing States, including human resource development. The funding related to human resources includes projects in education, health, nutrition and women's development. In addition, the World Bank provides loans for projects that benefit human health and yield high returns in terms of productivity, such as in waste management, sanitation and water supply.

32. The United Nations University (UNU) has established the Small Islands Network to strengthen research on small islands. Among other objectives, the Network seeks to integrate research on small islands and sustainable development under the auspices of a global network of scholars; create a small island information base and disseminate the relevant information; and to run electronic seminars and develop a body of scholars that can act as a global think-tank on small island development issues.

VI. External resources allocated to human resources development

33. Human resources development has been one of the few selected areas that have received high allocations of external resources in relation to other programme areas of the Programme of Action, perhaps reflecting the awareness of the importance of human resources in relation to the priorities established by the small island developing States Governments. Resource commitment data indicate that in 1994, bilateral assistance to human resources development in small island developing States totalled US$ 75.19 million, ranking the fourth among 15 programme areas. Multilateral commitments for the same year totalled US$ 14.85 million, ranking the second highest among the 15 programme areas.

34. However, the commitment data conceal a disturbing trend. Resources allocated to human resources development in small island developing States witnessed significant declines between 1991 and 1994. Bilateral commitments to this area fell from US$ 153.84 million in 1991 to US$ 75.19 million in 1994. The decline in multilateral commitments was even more dramatic – from a high of US$ 160.25 million in 1991 to US$ 14.85 million in 1994. In regional terms, Pacific and Caribbean small island developing States have seen the largest declines, both proportionately and in absolute values (see E/CN.17/1996/21).

VII. Conclusions and recommendations

A. Conclusions

35. The importance of human resources development in small island developing States has been recognized by all. Small island developing States Governments, regional organizations and the United Nations system have accorded priority to this area, as reflected in the initiatives by small island developing States and support action by both regional organizations and the United Nations system. However, the unique demographic, economic and geographic constraints faced by small island developing States call for a strengthening of the concerted efforts at human resources development.

36. Policy initiatives by some small island developing States Governments in institutional building, educational reform, training and regional cooperation in environmental management provide useful experiences, and should be shared with others in their efforts to formulate and implement human resource development strategies.

37. Although the present review demonstrates both the commitment of small island developing States to improving and strengthening their national and local human capacity and the support action being taken by regional organizations and the United Nations system, it is by no means certain that such initiatives and action are sufficient to meet the challenges, especially when the efforts are measured against the combined constraints and the scale of those challenges.

38. The recent declines in external resources allocated to human resources development in small island developing States are a cause of grave concern: a continuation or worsening of that trend is bound to adversely affect the human resource development prospects in small island developing States.

B. Recommendations

39. It is strongly recommended that small island developing States Governments continue to accord priority to human resources development in all its dimensions – human health and care, basic education, environmental education, and training and resource management in specific fields.

40. Given the demographic, economic and geographic constraints, small island developing States should consider a well educated, highly adaptable and environmentally conscious population and workforce as a central pillar of

national sustainable development. Small island developing States Governments should create conditions, including through regional mechanisms, to retain newly acquired or updated endogenous expertise.

41. Small island developing States should further strengthen regional cooperation through pooling resources and expertise, should increase the effectiveness of such cooperation through systematic identification of needs and planning of projects, and should increase the efficiency of regional resource use through better coordination.

42. Regional organizations and the United Nations system should strengthen their support to small island developing States. In particular, the organizations and bodies of the United Nations system should increase their operational activities for providing training and expertise to small island developing States in integrated resource management. Areas where local capacity is relatively insignificant should be accorded priority in the funding and provision of technical assistance.

43. The declines in external resources provided to small island developing States for human resource development should be reversed as a matter of urgency. In that regard, the envisaged meeting between representatives of small island developing States and bilateral and multilateral donors would provide a great opportunity for taking concrete actions.

Notes

[1] See *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992*, vol. I, *Resolutions Adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and Corrigendum), resolution 1, annex II, para. 37.1.

[2] See *Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 25 April-6 May 1994* (United Nations publication, Sales No. 94.I.18 and Corrigenda), chap. I, resolution 1, annex II, para. 60.

[3] For details, see *UNESCO 1996 Statistical Yearbook*.

[4] "Achieving sustainable development: environmental management plan of the Seychelles, 1990-2000", Paper prepared by the Government of Seychelles, with the advice and assistance of the United Nations Environment Programme, United Nations Development Programme and the World Bank.

[5] See "Report of the Commission on Sustainable Development on activities to implement the Programme of Action for the Sustainable Development of Small Island Developing States in the Pacific", prepared by the South Pacific Regional Environmental Programme jointly with the ESCAP Pacific Operations Centre, and with the financial assistance of the Governments of Australia and New Zealand.

[6] See Global Environment Facility, *Quarterly Operational Report*, November 1996.

[7] Review of the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States priorities for the future, paper prepared for the Economic Commission for Latin America and the Caribbean/Caribbean Development and Cooperation Committee (ECLAC/CDCC) by Simmons and Associates, 16 September 1997.